



The soil-water system as basis for a climate proof and healthy urban environment: Opportunities identified in a Dutch case-study

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Abstract:

One of the effects of climate change expected to take place in urban areas in the Netherlands is an increase in periods of extreme heat and drought. How the soil can contribute to making cities more climate proof is often neglected. Unsealed soil and green spaces increase water storage capacity and can consequently prevent flooding. The planning of public or private green spaces can have a cooling effect and, in general, have a positive effect on how people perceive their health. This paper reviews existing guidelines from Dutch policy documents regarding unsealed soil and green spaces in the Netherlands; do they support climate adaptation policies? Scientific literature was used to quantify the positive effects of green spaces on water storage capacity, cooling and public health. Finally we present a case study of a model town where different policy areas are linked together. Maps were made to provide insight into the ratio of unsealed soil and the number of green spaces in relation to existing guidelines using Geographical Information Systems (GIS). Maps marking the age and social-economic status of the population were also made. The benefits of green spaces are difficult to express in averages because they depend on many different factors such as soil properties, type of green spaces, population characteristics and spatial planning. Moreover, it is not possible to provide quantifications of the benefits of green spaces because of a lack of scientific evidence at the moment. Based on the maps, however, policy assessments can be made, for example, in which site a neighborhood will most benefit from investment in parks and public gardens. Neighborhoods where people have a low social-economic status have for example fewer green spaces than others. This offers opportunities for efficient adaptation policies linking goals of several policy fields.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Precipitation, Temperature

Extreme Weather Event: Drought, Flooding

Temperature: Extreme Heat, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Climate Change and Human Health Literature Portal

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Netherlands

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

General Health Impact

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Low Socioeconomic Status

Resource Type:

format or standard characteristic of resource

Policy/Opinion, Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content